

Estimating the Relationship Between Census Response and the Advertising and Partnership Campaign

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Abstract

Evaluations and analyses conducted during and after Census 2000 did not provide the Census Bureau with specific information about how a dollar's worth of advertising spending affected public cooperation or translated into dollar savings, nor how this played out by market segment.

Still, it is incumbent upon us to try and develop such business models. The ideal model would estimate the effects of communications spending, perhaps for media buys only, perhaps for other components of communications including the partnership program, on mail response to the census questionnaire (which can then be converted to dollars based on the expected savings from each percentage point improvement in mail response). It might also let us examine such effects separately for market segment. In an effort to get at this, we are considering several approaches, including:

- Planning qualitative research on public attitudes and messaging;
- Conducting a meta-analysis of all available Census 2000 documentation on the marketing and partnership programs;
- Developing strategies for models that might tease out separate impact of advertising and partnerships from the various census programs to improve public cooperation;
- Using multivariate analyses of 1990, Census 2000, and American Community Survey response to accurately identify our market segments; and
- Examining media mix models that will let us target optimal dollar expenditures by market segment and type of media.

Questions

1. Is the Census Bureau taking the right qualitative and quantitative steps to lay the groundwork for an informed marketing campaign in 2010?
2. Can the AMA provide additional advice about how to proceed with these approaches, or refer us to similar industry studies that we could use as models?
3. Are there approaches we are not considering that we should?

This report is released to inform interested parties of ongoing research and to encourage discussion of research in support of the 2010 Census communications campaign. The views expressed are those of the author and not necessarily those of the U.S. Census Bureau.

Evaluations and analyses conducted during and after Census 2000 did not provide the Census Bureau with specific information about how a dollar's worth of advertising spending affected public cooperation or translated into dollar savings...nor, of course, how this played out by market segment.

Neither did the Census 2000 Partnership Program seem to lend itself to such analysis.

Evaluation reports by the U.S. Department of Commerce Office of the Inspector General (IG), and by the Government Accountability Office (GAO), did assume that both programs positively affected mail response. The IG wrote that "Census conducted a two-part publicity campaign: (1) national paid advertisements began 6 months before census forms were mailed out; and (2) partnerships between the Bureau and state and local organizations developed community-specific initiatives to publicize the decennial...The 2000 response rate of 67% surpassed that of 1990 and far exceeded the projected rate of 61 percent. Considering the general downward trend in return rates from one census to the next, we commend the Bureau for having done an excellent job in motivating the American public to participate. The higher-than-expected response rate reduced cost of the decennial."¹

The GAO wrote that "Overall the Bureau made an extraordinary effort to fulfill the goals of the partnership program over a relatively short period. More significantly, based on our observations, it is quite likely that key census-taking activities, such as recruiting temporary census workers and encouraging people to complete their questionnaires, would have been less successful had it not been for the Bureau's aggressive partnership efforts."²

Our own internal evaluations were not as definitive about assuming a relationship between improved response and the advertising and partnership campaign. Census 2000 Topic Report No. 6 noted that "The Census Bureau was able in Census 2000 to reverse the downward trend in mail return rates and reduce the differential undercount. The combination of several major evaluation efforts for the Census 2000 Partnership and Marketing Program (PMP) provides much insight into the effects of the PMP, and the connection between the PMP and the other successes is intuitively compelling. However, the grand prize of the evaluation activities, a direct connection between the PMP interventions and return rates, remains elusive."³

This isn't peculiar to the Census Bureau. Understanding the return on investment (ROI) of advertising activities often "has been missing from the traditional mix of ad campaign management," and "the quest for ROI is littered with many roadblocks that make the task difficult, at best," including management skepticism of the process and measurements,

¹ *What Census 2000 Can Teach Us in Planning for 2010*, U.S. Department of Commerce, Office of the Inspector General, Report No. OIG-14431, Spring 2002, p. iv.

² *2000 Census: Review of Partnership Program Highlights Best Practices for Future Operations*, United States General Accounting Office, GAO-01-579, August 2001, p. 29.

³ *Evaluations of the Census 2000 Partnership and Marketing Program*, Census 2000 Topic Report No. 6, U.S. Census Bureau, February 2004, p. 19.

insufficient data, and the inability to link advertising or marketing campaigns with certainty to consumer decision making.⁴

Still, it is incumbent upon us to try and develop such business models. The American Marketing Association (AMA) Advisory Committee has pointed out that we are better situated to do this, and to understand our market segments, than any contractor we will hire. Further, federal procurement regulations will ask us to quantitatively express the dollar benefits of our major 2010 communications contract.

An ideal model would estimate the effects of communications spending, perhaps for media buys only, perhaps for other components of communications including the partnership program, on mail response to the census questionnaire (which can then be converted to dollars based on the expected savings from each percentage point improvement in mail response). It might also let us examine such effects separately for market segment. In an effort to get at this, since the Advisory Committee meeting in May, we are considering several approaches, including:

- Planning qualitative research on public attitudes and messaging;
- Conducting a meta-analysis of all available Census 2000 documentation on the marketing and partnership programs;
- Developing strategies for models that might tease out separate impacts of advertising and partnerships from the various census programs to improve public cooperation;
- Using multivariate analyses of 1990, Census 2000, and American Community Survey response to accurately identify our market segments; and
- Examining media mix models that will let us target optimal dollar expenditures by market segment and type of media.

Identifying Public Attitudes about Government, Privacy, and Confidentiality

To inform our communications campaign, but also to identify variation among potential market segments, the Census Bureau hopes to sponsor a number of focus groups throughout the fall of 2006. These would include Arab-American, African-American, Hispanic, and Asian populations, and quite a few ethnicities within each of those broader categories. This qualitative research would examine general knowledge about the census, personal experience with Census 2000, motivations to respond and potential barriers to cooperation, beliefs about how individual census information is kept confidential, and understanding about the Census Bureau as an agency.

Meta-Analysis and Return-On-Investment Modeling

We are currently considering three modeling approaches. One method would use logistic regression models that relate the probability of a mail return to a linear function of demographic variables and variables for the awareness of the census promotional communications. This

⁴ *Advertising's Holy Grail: The Quest for ROI, Perspectives on Societal and Consumer Trends*, Synthesis Alliance/Wirthlin Worldwide, 2004 Series No. 1, p. 1.

approach would utilize results of a Census 2000 evaluation survey that measured the public's awareness of the census and related promotional communications, and linked the results to census data to determine if the survey respondent returned the census questionnaire. The survey questions concerned whether the respondent had seen or heard of the census through each type of communication, such as television, radio, or things children brought home from school. The response to these questions were used to define a variable describing the respondents' awareness of the communications.

It is possible as well that this approach may yield information by market segment. For example, we might use the logistic regression model to estimate the probability of returning a form for those who have not seen any of the communications. Then we could estimate the probability for those who have "average" or "variant" scores on seeing communications. If we then multiplied the difference in the probabilities by the population size, we would have an estimate of the number of additional returns. We then could estimate the difference by the demographics in the model, such as white renters who speak English, and add them up.

Another approach would look at the downward trend line in mail response from 1970 to 1980 to 1990, and project what Census 2000 mail response would have been if this trend had continued. As part of the meta-analysis of the last census, actual response rates could be compared to the projection. Then the various improvements the Census Bureau utilized—including mailing treatments such as first class postage, "required by law" notifications, reminder cards, questionnaire design enhancements—could each be attributed to part of the response rate improvement. Data from panel testing before the census could be used to make these attributions. Remaining improvement could be attributed to advertising and partnerships, weighting the impact of each through managerial assessment or other non-quantitative approaches.

Finally, industry media mix models that seek to optimize product awareness by market segment, utilizing fixed advertising budget approaches, might be "run backwards" (using market segments defined by the Census Bureau and separately defined assumptions about media consumption) to estimate the costs by segment by media type for increasing census awareness.

Identifying Market Segments and Media Mix Modeling

Much work has been done by the Census Bureau to identify the barriers to enumeration, the demographic and geographic attributes of nonresponse, and how to use the data to target these populations in advance of the census. In addition, some interesting demographic and statistical studies have been done that look at the correlates of variations in response rates.

One tool the Census Bureau uses is called the Planning Database (PDB), which was developed in the late 1990s, and which borrowed from the pioneering Census Bureau work earlier in the decade that helped systematically categorize barriers to enumeration. The PDB assembled a range of demographic, housing, and socioeconomic data at the tract level in an effort to quantify these barriers and enable the targeting of potentially difficult areas. The PDB includes a hard-to-count score, which is an index that sorts tracts (and neighborhoods) on a difficulty-of-

enumeration continuum. Analysis has clearly shown the high correlation of response rates with HTC scores, and in turn the variables underlying the HTC score inform us about the characteristics associated with high or low response rates. Key findings include:

- Response rates vary dramatically within race and origin groups, depending on the characteristics of the population (as summarized by the HTC score);
- Response rates continue to vary with each additional layer of stratification--by race, then by tenure within race, then by type of household within given race and tenure groups, and finally, by type of structure within given race-origin-and household type groups; and
- These differentiated groups may get at the underlying attributes that influence participation in the census. In understanding patterns of response, the demographic specification is important. For example, while Non-Hispanic Whites tend to have low nonresponse rates (22 percent in 1990), the rate is as low as 13.2 percent for Non-Hispanic White homeowners who are married and living in a single family home or apartment (not mobile homes). However, for Non-Hispanic Whites who rent their home or apartment and are not married, the nonresponse rate jumps to 40.8 percent. This group comprised 10.4 million households in 1990.

Following the AMA Advisory Committee's advice that the Census Bureau is better suited than any external contractor to understand its own market segments, we hope to repeat these analyses with Census 2000 and perhaps with ACS data. If we can then attribute media consumption characteristics to these segments, we could also use media mix modeling techniques to look at optimal marketing approaches for these groups.

We believe these approaches, if successful, might help us to best use available resources for our marketing campaign. We appreciate all of the assistance the AMA Advisory Committee has provided thus far in helping us think through these steps, and look forward to the Committee's continued input.